Amendments to the Claims

This listing of claims replaces all prior versions, and listings, of claims in the above-identified application:

1. (currently amended) An occlusion resistant medical shunt for at least partial implantation into a patient, said shunt comprising an elongated conduit having a lumen therethrough, a proximal end for receipt of bodily fluids for flow through said shunt and a distal end for discharge of said bodily fluids from said shunt, a plurality of apertures at the proximal end of said shunt, said shunt further including one or more occlusion-resistant materials distributed in one or more separate [insertable] agent delivery device(s) contained within the lumen of said shunt; wherein said agent delivery device is not coated on, or impregnated in, the shunt wall, and wherein said agent delivery device(s) is selected from the group consisting of spheres, inserts, eluting plugs, seeds, elongated members and combinations thereof, and wherein the one or more occlusion-resistant materials are released internally from said agent delivery devices [the elongated conduit] to resist occlusion of the lumen of the shunt.

2. (original) The occlusion resistant medical shunt of claim 1 wherein the shunt further includes at least one valve.

3. (original) The occlusion resistant medical shunt of claim 1 wherein the elongated conduit includes one or more elastomeric materials selected from the group consisting of poly(L-lactic acid), poly(lactide-co-glycolide), poly(hydroxybutyrate-co-valerate), silicones, polyurethanes, polyesters, vinyl homopolymers and copolymers, acrylate homopolymers and copolymers, polyethers, polyethylene, polypropylene, polycarbonate, polysulfone, cellulosics,

polydimethylsiloxanes, methylhydrosiloxane-dimethylsiloxane copolymers, polymethylhydrosiloxanes, polyethylhydrosiloxanes, hydride terminated polyphenyl-(dimethylhydrosiloxy)siloxanes, methylhydrosiloxane-phenylmethylsiloxane copolymers, N-vinylpyrrolidone/methyl methacrylate copolymers, 2-hydroxyethylacrylate (e.g. polymacon), various copolymers of 2-hydroxyethylmethacrylate (e.g. hafilcon A and B, vifilcon A, tetrafilcon, dimefilcon, bufilcon, perfilcon, etc.), copolymers of N-vinylpyrrolidone (e.g. lidofilcon A and B, scafilcon A, surfilcon, vifilcon, filcon YA, etc.), polyamides, polyimides, fluoropolymers, polytetrafluoroethylenes, natural rubber and polyisoprene.

4. (original) The occlusion resistant medical shunt of claim 1 wherein the elongated conduit comprises a silicone elastomer material.

5. (original) The occlusion resistant medical shunt of claim 1 wherein the elongated conduit comprises polyurethane material.

6. (original) The occlusion resistant medical shunt of claim 1 wherein the occlusion-resistant material includes a material selected from the group of agents consisting of immunosuppressives, anti-inflammatories, anti-neoplastics, radiation emitting materials, anti-angiogenics, anti-coagulants, anti-proliferatives, anti-thrombogenics, anti-oxidants, cyclooxygenase inhibitors, calcium entry blockers, anti-neoplastics, anti-mitotics, anti-microbials, nitric oxide donors, cell cycle inhibitors, anti-cancer agents, anti-arthritis agents, anti-diabetic agents, thrombin inhibitors, thrombolytics, antibiotics, antiviral agents, and gene therapy agents.

7. (original) The occlusion resistant medical shunt of claim 6 wherein the occlusion-

resistant material includes a material selected from the group consisting of beta-radiation emitting isotopes, dexamethasone, beclomethasone, cortisone, hydrocortisone, prednisone, methylprednisone, fluorometholone, tranilast, ketoprofen, curcumin, cyclosporin A, deoxyspergualin, FK506, sulindac, myriocin, 2-aminochromone (U-86983), colchicines, pentosan, antisense oligonucleotides, mycophenolic acid, paclitaxel, etoposide, actinomycin D, camptothecin, carmustine, methotrexate, adriamycin, mitomycin, cis-platinum, mitosis inhibitors, vinca alkaloids, tissue growth factor inhibitors, platinum compounds, cytotoxic inhibitors, alkylating agents, antimetabolite agents, tacrolimus, rapamycin, azathioprine, recombinant or monoclonal antibodies to interleukins, T-cells, B-cells, and receptors, bisantrene, retinoic acid, tamoxifen, compounds containing silver, doxorubicin, azacytidine, homoharringtonine, selenium compounds, superoxide-dismutase, interferons, heparin, rapamycin ABT-578 and analogs, homologs, derivatives or combinations of the above group.

8. (original) The occlusion resistant shunt of claim 7 wherein the occlusion resistant material includes a material selected from the group consisting of mycophenolic acid, rapamycin, rapamycin ABT-578, derivatives or combinations thereof.

9. (original) The occlusion resistant shunt of claim 7 wherein the occlusion resistant material includes mycophenolic acid.

10. (original) The occlusion resistant shunt of claim 7 wherein the occlusion resistant material includes a combination of mycophenolic acid and, rapamycin or rapamycin ABT-578.

11. (original) The occlusion resistant medical shunt of claim 1 wherein the occlusion-resistant material is distributed uniformly throughout the shunt.

12. (original) The occlusion resistant medical shunt of claim 1 wherein the occlusion-resistant material is distributed only in drug eluting regions.

13. (original) The occlusion resistant medical shunt of claim 12 wherein different occlusion-resistant materials are used in different drug eluting regions of the shunt.

14. (canceled)

15. (canceled)

16. (original) The occlusion resistant medical shunt of claim 1 wherein the occlusion-resistant material is distributed non-uniformly throughout the shunt and in different amounts.

17. (original) The occlusion resistant medical shunt of claim 16 wherein the occlusion-resistant material is released at different rates between different portions of the shunt.

18. (currently amended) An occlusion resistant medical cannula for at least partial implantation into a patient, said cannula comprising an elongated conduit having a lumen therethrough, a proximal end for receipt of bodily fluids for flow through said cannula and a distal end for discharge of said bodily fluids from said cannula, a plurality of apertures at the proximal end of said cannula, said cannula further including one or more occlusion-resistant materials distributed in one or more separate [insertable] agent delivery device(s) that is not coated on or impregnated in the shunt wall and is contained within the lumen of said cannula, wherein said agent delivery device(s) is selected from the group consisting of spheres, inserts,

eluting plugs, seeds, elongated members and combinations thereof, wherein the one or more occlusion-resistant materials are released internally from one or more agent delivery devices that provide occlusion resistance of the lumen of the cannula.

19. (original) The occlusion resistant medical cannula of claim 18 wherein the cannula further includes at least one valve.

20. (original) The occlusion resistant medical cannula of claim 18 wherein the elongated conduit includes one or more elastomeric materials selected from the group consisting of poly(L-lactic acid), poly(lactide-co-glycolide), poly(hydroxybutyrate-co-valerate), silicones, polyurethanes, polyesters, vinyl homopolymers and copolymers, acrylate homopolymers and copolymers, polyethers, polyethylene, polypropylene, polycarbonate, polysulfone, cellulosics, polydimethylsiloxanes, methylhydrosiloxane-dimethylsiloxane copolymers, polymethylhydrosiloxanes, polyethylhydrosiloxanes, hydride terminated polyphenyl-(dimethylhydrosiloxy)siloxanes, methylhydrosiloxane-phenylmethylsiloxane copolymers, N-vinylpyrrolidone/methyl methacrylate copolymers, 2-hydroxyethylacrylate (e.g. polymacon), various copolymers of 2-hydroxyethylmethacrylate (e.g. hafilcon A and B, vifilcon A, tetrafilcon, dimefilcon, bufilcon, perfilcon, etc.), copolymers of N-vinylpyrrolidone (e.g. lidofilcon A and B, scafilcon A, surfilcon, vifilcon, filcon YA, etc.), polyamides, polyimides, fluoropolymers, polytetrafluoroethylenes, natural rubber and polyisoprene.

21. (original) The occlusion resistant medical cannula of claim 20 wherein the elongated conduit comprises a silicone elastomer material.

22. (original) The occlusion resistant medical cannula of claim 20 wherein the elongated

conduit comprises polyurethane material.

23. (original) The occlusion resistant medical cannula of claim 18 wherein the occlusion-resistant material includes a material selected from the group of agents consisting of immunosuppressives, anti-inflammatories, anti-neoplastics, anti-angiogenics, anti-coagulants, anti-proliferatives, anti-thrombogenics, anti-oxidants, cyclooxygenase inhibitors, calcium entry blockers, anti-neoplastics, anti-mitotics, anti-microbials, nitric oxide donors, cell cycle inhibitors, anti-cancer agents, anti-arthritis agents, anti-diabetic agents, thrombin inhibitors, thrombolytics, antibiotics, antiviral agents, and gene therapy agents.

24. (original) The occlusion resistant medical cannula of claim 23 wherein the occlusion-resistant material includes a material selected from the group consisting of beta-radiation emitting isotopes, dexamethasone, beclomethasone, cortisone, hydrocortisone, prednisone, methylprednisone, fluorometholone, tranilast, ketoprofen, curcumin, cyclosporin A, deoxyspergualin, FK506, sulindac, myriocin, 2-aminochromone (U-86983), colchicines, pentosan, antisense oligonucleotides, mycophenolic acid, paclitaxel, etoposide, actinomycin D, camptothecin, carmustine, methotrexate, adriamycin, mitomycin, cis-platinum, mitosis inhibitors, vinca alkaloids, tissue growth factor inhibitors, platinum compounds, cytotoxic inhibitors, alkylating agents, antimetabolite agents, tacrolimus, rapamycin, azathioprine, recombinant or monoclonal antibodies to interleukins, T-cells, B-cells, and receptors, bisantrene, retinoic acid, tamoxifen, compounds containing silver, doxorubicin, azacytidine, homoharringtonine, selenium compounds, superoxide-dismutase, interferons, heparin, rapamycin ABT-578 and analogs, homologs, derivatives or combinations of the above group.

25. (original) The occlusion resistant medical cannula of claim 24 wherein the occlusion

resistant material includes a material selected from the group consisting of mycophenolic acid, rapamycin, rapamycin ABT-578, derivatives or combinations thereof.

26. (original) The occlusion resistant shunt of claim 25 wherein the occlusion resistant material includes mycophenolic acid.

27. (original) The occlusion resistant shunt of claim 25 wherein the occlusion resistant material is a combination of mycophenolic acid and rapamycin or rapamycin ABT-578.

28. (original) The occlusion resistant medical cannula of claim 18 wherein different occlusion-resistant materials are used in different agent delivery devices included in the cannula.

29. (canceled)

30. (original) The occlusion resistant medical cannula of claim 18 wherein the occlusion-resistant material is distributed non-uniformly throughout the agent delivery devices and in different amounts.

31. (original) The occlusion resistant medical cannula of claim 30 wherein the occlusion-resistant material is released at different rates between different agent delivery devices of the cannula.

32. (currently amended) A method of preparing an occlusion resistant shunt comprising: providing an elongated conduit having a lumen therethrough and including a proximal end for receipt of bodily fluids for flow through said shunt and a distal end for discharge of said bodily

fluids from said shunt, said conduit having plurality of apertures at the proximal said shunt, administering to said shunt one or more occlusion-resistant materials distributed in one or more separate[insertable] agent delivery devices that is not coated on, or impregnated in, the shunt wall and is contained within the lumen of said shunt, wherein said agent delivery device(s) is selected from the group consisting of spheres, inserts, eluting plugs, seeds, elongated members and combinations thereof, wherein the one or more occlusion-resistant materials are released internally from said agent delivery devices [the elongated conduit] to resist occlusion of the lumen of said shunt.

33. (original) The method of preparing an occlusion resistant shunt of claim 32 wherein the shunt further includes at least one valve.

34. (original) The method of preparing an occlusion resistant shunt of claim 32 wherein the elongated conduit includes one or more elastomeric materials selected from the group consisting of poly(L-lactic acid), poly(lactide-co-glycolide), poly(hydroxybutyrate-co-valerate), silicones, polyurethanes, polyesters, vinyl homopolymers and copolymers, acrylate homopolymers and copolymers, polyethers, polyethylene, polypropylene, polycarbonate, polysulfone, cellulosics, polydimethylsiloxanes, methylhydrosiloxane-dimethylsiloxane copolymers, polymethylhydrosiloxanes, polyethylhydrosiloxanes, hydride terminated polyphenyl-(dimethylhydrosiloxy)siloxanes, methylhydrosiloxane-phenylmethylsiloxane copolymers, N-vinylpyrrolidone/methyl methacrylate copolymers, 2-hydroxyethylacrylate (e.g. polymacon), various copolymers of 2-hydroxyethylmethacrylate (e.g. hafilcon A and B, vifilcon A, tetrafilcon, dimefilcon, bufilcon, perfilcon, etc.), copolymers of N-vinylpyrrolidone (e.g. lidofilcon A and B, scafilcon A, surfilcon, vifilcon, filcon YA, etc.), polyamides, polyimides, fluoropolymers, polytetrafluoroethylenes, natural rubber and polyisoprene.

35. (original) The method of preparing an occlusion resistant shunt of claim 32 wherein the elongated conduit comprises a silicone elastomer material.

36. (original) The method of preparing an occlusion resistant shunt of claim 32 wherein the elongated conduit comprises polyurethane material.

37. (original) The method of preparing an occlusion resistant shunt of claim 32 wherein the occlusion-resistant material includes a material selected from the group of agents consisting of immunosuppressives, anti-inflammatories, anti-neoplastics, anti-angiogenics, anti-coagulants, anti-proliferatives, anti-thrombogenics, anti-oxidants, cyclooxygenase inhibitors, calcium entry blockers, anti-neoplastics, anti-mitotics, anti-microbials, nitric oxide donors, cell cycle inhibitors, anti-cancer agents, anti-arthritis agents, anti-diabetic agents, thrombin inhibitors, thrombolytics, antibiotics, antiviral agents, and gene therapy agents.

38. (original) The method of preparing an occlusion resistant shunt of claim 37 wherein the occlusion-resistant material includes a material selected from the group consisting of beta-radiation emitting isotopes, dexamethasone, beclomethasone, cortisone, hydrocortisone, prednisone, methylprednisone, fluorometholone, tranilast, ketoprofen, curcumin, cyclosporin A, deoxyspergualin, FK506, sulindac, myriocin, 2-aminochromone (U-86983), colchicines, pentosan, antisense oligonucleotides, mycophenolic acid, paclitaxel, etoposide, actinomycin D, camptothecin, carmustine, methotrexate, adriamycin, mitomycin, cis-platinum, mitosis inhibitors, vinca alkaloids, tissue growth factor inhibitors, platinum compounds, cytotoxic inhibitors, alkylating agents, antimetabolite agents, tacrolimus, rapamycin, azathioprine, recombinant or monoclonal antibodies to interleukins, T-cells, B-cells, and receptors, bisantrene, retinoic acid,

tamoxifen, compounds containing silver, doxorubicin, azacytidine, homoharringtonine, selenium compounds, superoxide-dismutase, interferons, heparin, rapamycin ABT-578 and analogs, homologs, derivatives or combinations of the above group.

39. (original) The method of preparing an occlusion resistant shunt of claim 38 wherein the occlusion resistant material includes a material selected from the group consisting of mycophenolic acid, rapamycin, rapamycin ABT-578, derivatives or combinations thereof.

40. (original) The occlusion resistant shunt of claim 39 wherein the occlusion resistant material includes mycophenolic acid.

41. (original) The occlusion resistant shunt of claim 35 wherein the occlusion resistant material includes a combination of mycophenolic acid and, rapamycin or rapamycin ABT-578.

42. (original) The method of preparing an occlusion resistant shunt of claim 32 wherein the occlusion-resistant material is distributed uniformly throughout the shunt.

43. (original) The method of preparing an occlusion resistant shunt of claim 32 wherein the occlusion-resistant material is distributed only in drug eluting regions.

44. (original) The method of preparing an occlusion resistant shunt of claim 32 wherein the drug eluting regions are selected from the group consisting of the proximal portion, the distal portion, and one or more valves.

45. (original) The method of preparing an occlusion resistant shunt of claim 44 wherein

different occlusion-resistant materials are used in different drug eluting regions of the shunt.

46. (canceled)

47. (canceled)

48. (original) The method of preparing an occlusion resistant shunt of claim 32 wherein the occlusion-resistant material is distributed non-uniformly throughout the shunt and in different amounts.

49. (original) The method of preparing an occlusion resistant shunt of claim 48 wherein the occlusion-resistant material is released at different rates between different portions of the shunt.

50. (currently amended) A method of inhibiting the occlusion of an at least partially implanted shunt comprising:
implanting a shunt including an elongated conduit having a lumen therethrough, a proximal end for receipt of bodily fluids for flow through said shunt and a distal end for discharge of said bodily fluids from said shunt, said shunt having a plurality of apertures at the proximal of said shunt, said shunt further including one or more occlusion-resistant materials distributed in one or more separate [insertable] agent delivery device(s) that is not coated on, or impregnated in, the shunt wall and is contained within the lumen of said shunt, wherein said agent delivery device(s) is selected from the group consisting of spheres, inserts, eluting plugs, seeds, elongated members, and combinations thereof; and releasing from said agent delivery devices [the internal elongated conduit] the one or more occlusion-resistant materials to inhibit the occlusion of the lumen of said shunt.

51. (original) The method of inhibiting the occlusion of an at least partially implanted shunt of claim 50 wherein the shunt further includes at least one valve.

52. (original) The method of inhibiting the occlusion of an at least partially implanted shunt of claim 50 wherein the elongated conduit includes one or more elastomeric materials selected from the group consisting of poly(L-lactic acid), poly(lactide-co-glycolide), poly(hydroxybutyrate-co-valerate), silicones, polyurethanes, polyesters, vinyl homopolymers and copolymers, acrylate homopolymers and copolymers, polyethers, polyethylene, polypropylene, polycarbonate, polysulfone, cellulosics, polydimethylsiloxanes, methylhydrosiloxane-dimethylsiloxane copolymers, polymethylhydrosiloxanes, polyethylhydrosiloxanes, hydride terminated polyphenyl-(dimethylhydrosiloxy)siloxanes, methylhydrosiloxane-phenylmethylsiloxane copolymers, N-vinylpyrrolidone/methyl methacrylate copolymers, 2-hydroxyethylacrylate (e.g. polymacon), various copolymers of 2-hydroxyethylmethacrylate (e.g. hafilcon A and B, vifilcon A, tetrafilcon, dimefilcon, bufilcon, perfilcon, etc.), copolymers of N-vinylpyrrolidone (e.g. lidofilcon A and B, scafilcon A, surfilcon, vifilcon, filcon YA, etc.), polyamides, polyimides, fluoropolymers, polytetrafluoroethylenes, natural rubber and polyisoprene.

53. (original) The method of inhibiting the occlusion of an at least partially implanted shunt of claim 50 wherein the elongated conduit comprises a silicone elastomer material.

54. (original) The method of inhibiting the occlusion of an at least partially implanted shunt of claim 50 wherein the elongated conduit comprises polyurethane material.

55. (original) The method of inhibiting the occlusion of an at least partially implanted shunt of claim 50 wherein the occlusion-resistant material is selected from the group of agents consisting of immunosuppressives, anti-inflammatories, anti-neoplastics, anti-angiogenics, anti-coagulants, anti-proliferatives, anti-thrombogenics, anti-oxidants, cyclooxygenase inhibitors, calcium entry blockers, anti-neoplastics, anti-mitotics, anti-microbials, nitric oxide donors, cell cycle inhibitors, anti-cancer agents, anti-arthritis agents, anti-diabetic agents, thrombin inhibitors, thrombolytics, antibiotics, antiviral agents, and gene therapy agents.

56. (original) The method of inhibiting the occlusion of an at least partially implanted shunt of claim 55 wherein the occlusion-resistant material includes a material selected from the group consisting of beta-radiation emitting isotopes, dexamethasone, beclomethasone, cortisone, hydrocortisone, prednisone, methylprednisone, fluorometholone, tranilast, ketoprofen, curcumin, cyclosporin A, deoxyspergualin, FK506, sulindac, myriocin, 2-aminochromone (U-86983), colchicines, pentosan, antisense oligonucleotides, mycophenolic acid, paclitaxel, etoposide, actinomycin D, camptothecin, carmustine, methotrexate, adriamycin, mitomycin, cis-platinum, mitosis inhibitors, vinca alkaloids, tissue growth factor inhibitors, platinum compounds, cytotoxic inhibitors, alkylating agents, antimetabolite agents, tacrolimus, rapamycin, azathioprine, recombinant or monoclonal antibodies to interleukins, T-cells, B-cells, and receptors, bisantrene, retinoic acid, tamoxifen, compounds containing silver, doxorubicin, azacytidine, homoharringtonine, selenium compounds, superoxide-dismutase, interferons, heparin, rapamycin ABT-578 and analogs, homologs, derivatives or combinations of the above group.

57. (original) The method of inhibiting the occlusion of an at least partially implanted shunt of claim 56 wherein the occlusion resistant material includes a material selected from the group

consisting of mycophenolic acid, rapamycin, rapamycin ABT-578, derivatives or combinations thereof.

58. (original) The occlusion resistant shunt of claim 57 wherein the occlusion resistant material includes mycophenolic acid.

59. (original) The occlusion resistant shunt of claim 51 wherein the occlusion resistant material includes a combination of mycophenolic acid and, rapamycin or rapamycin ABT-578.

60. (original) The method of inhibiting the occlusion of an at least partially implanted shunt of claim 50 wherein the occlusion-resistant material is distributed uniformly throughout the shunt.

61. (original) The method of inhibiting the occlusion of an at least partially implanted shunt of claim 50 wherein the occlusion-resistant material is distributed only in drug eluting regions.

62. (original) The method of inhibiting the occlusion of an at least partially implanted shunt of claim 50 wherein the drug eluting regions are selected from the group consisting of the proximal portion, the distal portion, and one or more valves.

63. (original) The method of inhibiting the occlusion of an at least partially implanted shunt of claim 62 wherein different occlusion-resistant materials are used in different drug eluting regions of the shunt.

64. (canceled)

65. (canceled)

66. (original) The method of inhibiting the occlusion of an at least partially implanted shunt of claim 50 wherein the occlusion-resistant material is distributed non-uniformly throughout the shunt and in different amounts.

67. (original) The method of inhibiting the occlusion of an at least partially implanted shunt of claim 66 wherein the occlusion-resistant material is released at different rates between different portions of the shunt.